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How Islamic is the Diminishing Musharakah Model used for Home Financing?

By Zubair HASAN[†]

Abstract. For financing consumer durables like houses, cars or computers, conventional banks use what are called the equated monthly installment (EMI) models. EMI is the fixed payment a borrower makes to a lender to pay off both interest and principal each month so that over a specified number of years, the loan amount is cleared in full. Islamic banks have followed the practice using EMI on diminishing musharakah partnership basis. The model is popularly known as the MMP, an abbreviation of its Arabic nomenclature. The defining character of this model is increasing amortization of capital through a customer *buy back* provision in the agreement. We have shown more than once that models of the sort invariably involve compounding of return on capital and pass the ownership of property to the client at a slower rate than the rate of capital amortization until the contract is concluded. This paper provides additional evidence and documentation to reiterate that the MMP exhibits the same characteristics and is not, therefore, Shari'ah compliant. We propose an alternative model free of the indicated blemishes, having additional advantages as well.

Keywords. Islamic banks, Home financing; Constructive possession, Diminishing balance, Compounding process.

JEL. G20, K40, K20.

1. Introduction

The formula for calculating the periodic uniform installment payments in the so-called Islamic MMP model of home financing is the same as the conventional interest based banks use for the purpose and is a part of the Excel program. We produce it below for ready reference.

$$A = P_0 \frac{r_i(1+r_i)^n}{(1+r_i)^n - 1} \quad (1)$$

Here, A is the monthly payment or the EMI; P_0 is the loan amount; r_i is the monthly rate of interest obtained the annual percent rate divided by 12×100 and n is the loan period in months to illustrate, suppose a loan of 80,000 in any monetary units is taken at an annual rate of interest of 8% for 10 years. Then the monthly installment payable would be:

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$$A = 80000 \frac{0.006667(1 + 0.006667)^{120}}{(1 + 0.006667)^{120} - 1} = 971 \quad (2)$$

The formula having exponentials implies compounding of interest. The fact is well recognized in mainstream literature². The installment payment need not necessarily be monthly; it may be quarterly, semi-annual or yearly. The impact of compounding decreases as the periodicity of installment payment increases. Table below based on the above illustration verifies the statement. The Table testifies to one more possible test of compounding in the uniform installment regime i.e. the effective interest rate runs higher than the nominal interest rate (IRR). Notice that the gap between the two rates narrows down with an increase in periodicity.

Table 1. *Installments and rates of interest*

Periodicity	Montly	Quarterly	Semi-annual
Installment	971	2924	5887
Effective rates	3.80	4.62	4.72
Nominal rates	0.67	2.00	4.00

Thus, the EMI which banks so commonly use in financing various sorts of consumer durables is infested with more of compounding than others indicated in Table 1.

In the following Section 2 we briefly explain the contextual background of this paper lest we may be running ahead of the story. Section 3 demonstrates how the popular MMP model Islamic banks invariably use across countries violates the Shari'ah requirements. Section 4 presents the broad outlines of the ZDBM, the alternative model to the MMP we have proposed. The model avoids Shari'ah non-compliance and has other advantages as well. The final Section summarizes the argument and makes a few concluding observations.

2. The background

What set me thinking on home financing modes Islamic banks used was a 2009 article of Meera & Razak (2009) on the musharakah mutanaqisah partnership contracts to which Islamic banks were increasingly switching over in home financing. The authors creditably showed how the MMP was superior to other models in use. However they failed to realize that the structure they supported was no different in form and consequences than the conventional interest based practice. Only the words rent or mark-up replaced banished interest with little realization that coloring the feathers does not change the bird. I discovered and showed that the EMI determination has two serious limitations:

First, the periodic uniform installment payments are calculated on compounding basis and second, the property ownership transfer to the client is at a slower rate than the capital amortization. Both defects make the MMP go against the Islamic law in form, substance and intent. I also constructed an alternate model free of the two blemishes. The ideas were presented to the faculty but the colleagues refused to be convinced. However, the ISRA International Journal of Islamic Finance put

² Today, across the world, all the EMI's (Equated monthly Installments) are being calculated on compound interest. Check the following web sites: [Retrieved from]. and [Retrieved from]. Accessed on July 7, 2016

Turkish Economic Review

across my argument in their *June* 2011 issue. Mr. Daud Vicary Abdullah, the INCEIF Chief applauded the proposed model. In a piece posted on *August* 22, 2011 at the institutional blog - Diamonds in the cupboard – he commented as follows:

“As a former practitioner I found the content not only fascinating, but also the relevance of the DBM structure for reducing the cost of Home financing to the customer. I would strongly recommend that my colleagues in the profession and Islamic finance customers alike to take a look at this innovative product and see how it can be implemented for the benefit of all as soon as possible.”

Meanwhile, I published a few more articles on the issue, including the one in 2011 putting question marks on the home financing program of *La Riba* of America using the popular EMI installments with an illustration.³ These papers were circulated on the internet and were sent also to some bankers and Shari’ah scholars for comments but none were received.

On the academic front there were a few interesting developments. In 2012, Meera published a *Critique* of my proposal by now known as the ZDBM of home financing. His main points of criticism were as under:

1. ZDBM is similar to the conventional interest based loan, or at best, similar to the murabahah-based bay bithaman ajil (BBA).
2. It is not cheaper to the customer. On the contrary, it is potentially more burdensome to him, particularly when it comes to early settlement.
3. Musharakah mutinaqisa program for home financing or the MMP is superior to the ZDBM and is recognized as fully Shari’ah compliant.

I had dealt with these observations at length in that order in a detailed 2013 note and shown as to how the demonstrations in the *Critique* were at variance with Meera’s own perceptive positions. I need not produce the whole rebuttal here; suffice to quote the following semi-annual equation on the relative superiority of the proposed model.

$$\begin{array}{ccccc} \text{Models} & & \text{Funding Deposits} & & \text{Return on Capital} \\ \hline \text{ZDBM} & = & \frac{840000}{943270} & = & \frac{33600}{37731} = 0.891 \end{array} \quad (3)$$

Nabil (2013) in a lengthy conceptual paper convincingly established to my relief that Islamic home financing models in current use - MMP included - involve compounding of return on capital – interest, rent or mark-up - if the EMI formula were used for the determination of a uniform periodic installment payment. He also agreed that in a case of breach of contract, the bank will in the MMP model as in the conventional, not accept from the sale proceeds of the property less than the part of capital that remains unpaid, assuming for simplicity that the market price of the house remains unchanged. On this view of what Nabil calls the *dynamic balance*, he held that even the ZDBM does not meet the pro rata transference norm, it comes closer to the ideal than any other model though. This point I refuted in my 2014 note and demonstrated how ZDBM meets the following norm at each time point:

$$\frac{\text{Cumulative Amortization ratio}}{\text{Ownership transfer ratio}} = 1 \quad (4)$$

³ The site American Finance House – LARIBA: Financing alternative to the conventional Riba” system, Lariba.com Home Financing was accessed on 24.10.2011. The illustration was subsequently seems to have been withdrawn from the site.

3. Compounding and ownership transfer

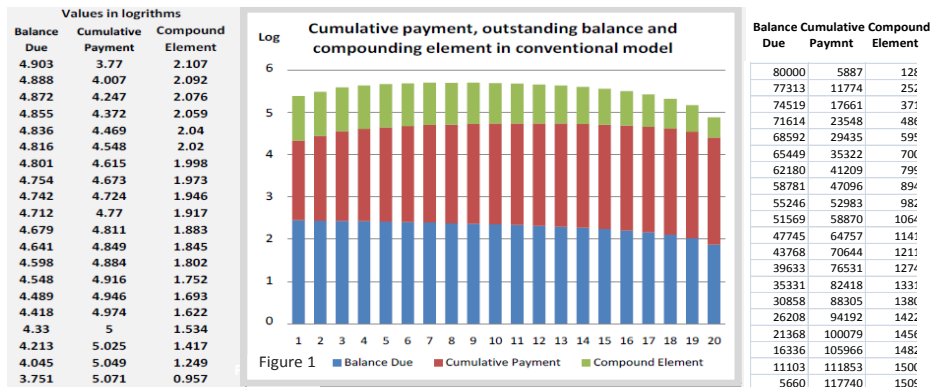
I must desist from reproducing what already exist in my papers on the Shari'ah non-compliance of the MMP structure. However, a new analytical demonstration of compounding ingrained in the periodic determination of the uniform installment payments, one may find interesting. For this we take the semi-annual case from Table 1. Here, the periodic payment in more exact terms is 5886.54 in any monetary units. The total payment being approximately 5886.54 times 20 = 117731, the overall annual rate for the 10 year loan period covering both amortization of capital and the semiannual return on it would be 14.72%. From the total amount paid, if we take out the principal 80,000, the reaming amount 37731 is return on capital the average semi-annual payment would be 1887. The balance outstanding at the end of a period is calculated as follows.

Balance $n - 1 = \text{Balance } n + \text{Return on capital } n - \text{Installment}$. For example, for period 2 in our illustration the balance outstanding would be $80000 + 3200 - 5887 = 77313$. The process goes on until the end of the contract. Thus, the preceding year return on capital is subjected to charge in the current year. Table 2 shows the isolation of compounding in the MMP which is the same as would be in the interest based conventional finance.

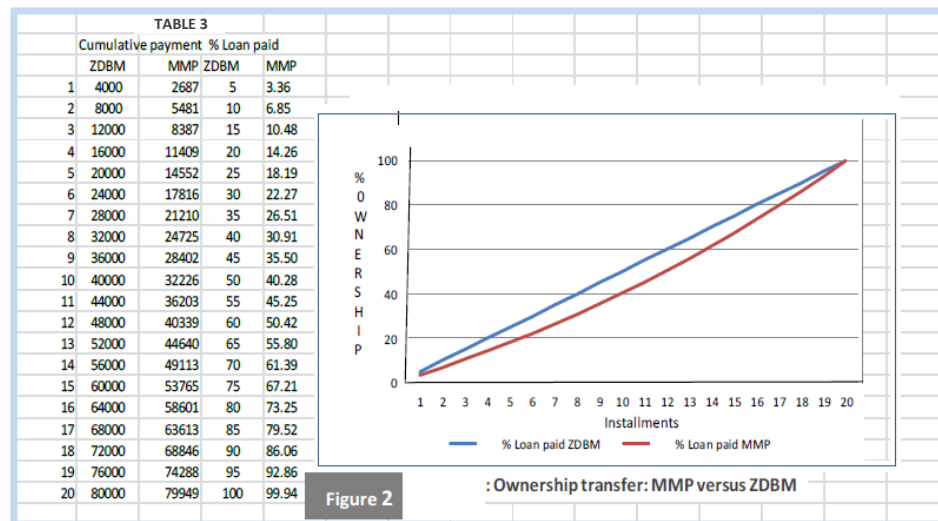
TABLE 2.1: The process of compounding in the MMP						TABLE 2.2: ZDBM is free of compounding			
n	Balance	Return on Capital	Rate of Return	Installmen	Compound component	Return of Capital	Balance	Return on Capital	Installment
1	80000	3200	0.04	5887	128	4000	80000	3200	7200
2	77313	3093	0.04	5887	124	4000	76000	3040	7040
3	74519	2981	0.04	5887	119	4000	72000	2880	6880
4	71614	2865	0.04	5887	115	4000	68000	2720	6720
5	68592	2744	0.04	5887	110	4000	64000	2560	6560
6	65449	2618	0.04	5887	105	4000	60000	2400	6400
7	62180	2487	0.04	5887	99	4000	56000	2240	6240
8	58781	2351	0.04	5887	94	4000	52000	2080	6080
9	55246	2210	0.04	5887	88	4000	48000	1920	5920
10	51569	2063	0.04	5887	83	4000	44000	1760	5760
11	47745	1910	0.04	5887	76	4000	40000	1600	5600
12	43768	1751	0.04	5887	70	4000	36000	1440	5440
13	39633	1585	0.04	5887	63	4000	32000	1280	5280
14	35331	1413	0.04	5887	57	4000	28000	1120	5120
15	30858	1234	0.04	5887	49	4000	24000	960	4960
16	26206	1048	0.04	5887	42	4000	20000	800	4800
17	21368	855	0.04	5887	34	4000	16000	640	4640
18	16336	653	0.04	5887	26	4000	12000	480	4480
19	11103	444	0.04	5887	18	4000	8000	320	4320
20	5660	226	0.04	5887	9	4000	4000	160	4160
Σ		37731		117731	1509	80000		33600	113600
	943270					840000			

Figure 1 presents the facts of Table 2.1 in visual depiction to reveal the nature of their relationships and curvatures. Since cumulative values of the variables are too large in relative magnitudes, we have employed logarithms to draw the Figure but corresponding natural numbers have also been provided.

Turkish Economic Review



Nabil is in error to contend that the ZDBM too does not pass the ownership to the client pro rata. In ZDBM the return of capital 80000 is uniformly spread over the time units. In the above illustration, 4000 is paid semi-annually in 20 units each of 5%. The ownership transfer follows the return of capital, not the overall installment payments. In the MMP it lags behind until the last installment is cleared.



Source: Author's own construction

4. The alternative - ZDBM

We have already mentioned the ZDBM as an alternative to the MMP. There is ample discussion on the model in the literature on Islamic home financing. We explain the model here in bare bones for completion of our argument.

The customer in the semiannual payments regime of our illustration approaches an Islamic bank to find details for obtaining the \$80,000 payable in 10 years spread over 20 installments. The bank agreeing to meet his requirements makes him the offer as follows. "We shall provide you the needed \$80,000 under a *murabahah* contract⁴ with a yearly mark-up of 8% to acquire proprietary rights in the house but

⁴ In earlier papers we had explained the ZDBM in the form of MMP structure. Here we have used *murabahah* modeling for explanation because it covers the use over a wider range where identical problems with reference to compounding and ownership transfer arise. However, related details and consequences remain the same.

Turkish Economic Review

with a *constructive possession* condition in favor of the bank (Brain 2011, 49).⁵ For getting back our investment in 20 installments spread over ten years, you will pay \$4000 each six months to clear the loan. In addition, any point in time; the mark-up amount (return on capital) will be calculated on the diminishing balance of the loan. That would reduce your *constructive liability* to the bank proportionately with the passage of time until periodic installments – amortization + return on balance due are all cleared”. The client agrees to the terms offered and the contract is signed with an annexure as under. The Table contains the details of his semiannual payments - return of capital and return on capital.

TABLE 4: ZDBM - Operational Details				
	Return of	Balance	Return on	
n	Capita	Due	Capital	Installment
	A	B	C = B*.04	D = A + C
1	4000	80000	3200	7200
2	4000	76000	3040	7040
3	4000	72000	2880	6880
4	4000	68000	2720	6720
5	4000	64000	2560	6560
6	4000	60000	2400	6400
7	4000	56000	2240	6240
8	4000	52000	2080	6080
9	4000	48000	1920	5920
10	4000	44000	1760	5760
11	4000	40000	1600	5600
12	4000	36000	1440	5440
13	4000	32000	1280	5280
14	4000	28000	1120	5120
15	4000	24000	960	4960
16	4000	20000	800	4800
17	4000	16000	640	4640
18	4000	12000	480	4480
19	4000	8000	320	4320
20	4000	4000	160	4160
Σ	80000	840000	33600	113600

Bankers invariably point out two advantages of the MMP. First, a uniform periodic payments in the model as opposed to their variability in the ZDBM is more convenient for the client to remember and plan his family budget over the contract time span. Second, the installments in the earlier stages are larger in the ZDBM for younger persons at the lower rungs of their periodic incomes and may shy away from going in to have a residence of their own. Even if we grant the contentions for a moment, convenience does not make permissible what palpably is not. It is also pleaded that Islamic banks do not charge interest; they take rent or earn profit. Prohibition of compounding is thus not applicable to their earnings. But the coloring of feathers does not make the bird different.

On a sober note, larger initial payments tapering off with the passage of time are likely to be helpful to the young with no or small family to start with. Diminishing installments would certainly be welcome at a time when family is expanding and expenditures are peaking in the middle of the age cycle. Furthermore, the cases of

⁵ The item for sale – the house in this case – should, in principle, be under ownership of the seller and in his corporeal possession at the time of contracting its sale. However, both common civil law and Islamic Shai’ah allow what is known *constructive possession* as valid in a deferred sale. It means that the asset financed will be deemed as the property of the financier until buyer clears his financial liability in full under the contract. (See also Craig (2012) and [Retrieved from]).

Turkish Economic Review

both husband and wife working in modern couples, are on the rise softening the rigors of life. In a drive ‘shelter for all’ obligatory in Islam, public authorities may subsidize home financing for the poorer sections of the nationals.

We have time and again highlighted the superiority of the ZDBM over the MMP in earlier writings. We briefly list them below for ready reference.

a) ZDBM turns out to be cheaper for the customer due to a faster repayment of capital plan. For example, in our illustration the customer gains 4108 - the difference between the return on capital columns of Tables 2.1 and 2.2.

b) Significantly, the customer does not gain at the cost of the banker. Notice that the sum of outstanding balance, the proxy for funding deposits, is proportionate to the reduction in the returns on capital in equation (3) above. For this reason the margin on funding deposits remains the same in both cases i.e. 4%. ZDBM is thus a win-win position for both the parties: The cost of the house is reduced for the client. Islamic banks get an edge over their conventional rivals without losing on profit margin. This means that ZDBM is relatively more efficient; it absorbs less funding than the MMP.

c) The ownership of property passes faster to the customer. Researches show that constant amortization programs, as in the ZDBM, are more equitable than any other scheme in operation (Chambers et al., 2007). In our illustration, half way down the time scale 50% ownership passes to the customer as compared to 40% under the MMP. Thus, for the customer and society the fixity of amortization - not the fixity of installment payments – is more important and just

d) In decades long contracts as home financing usually involves, payment defaults even premature terminations are not ruled out. In such cases ZDBM is more equitable to the parties. Suppose in Table 3 above, default takes place half-way i.e. after 10 installments have been paid in each case (See row 11). Under the ZDBM the buyer’s liability reduces proportionately to 50% while under the MMP he will still have to pay almost 60% of the debt -\$ 7713 more to be exact.

e) In the MMP there can arise and have arisen disputes on the revision of rental, the value of the property and the amount of liability remaining unpaid once default takes place. In the ZDBM matters are much clearer. The return on capital – the operation of the mark-up stops at once in case of default. The house will remain under charge for any outstanding balance on capital account alone.

f) The MMP also requires the creation of three transactions: (i) creation of a joint ownership in property; (ii) the financier leases his share in the house to the customer on rent and (iii) the customer undertakes to purchase different units of the financier’s share until the ownership is completely transferred to the former. Taken singly, the jurists regard the three transactions valid if certain conditions are fulfilled. However, it is strongly doubted if their combination in a single contract could be allowed. (Hasan, 2011, p. 15).

g) Scholars are divided on the issue if the undertaking of the customer to buy-back the financier’s share in the property would be enforceable in a court of law because of absence of consideration, if not for the lack of free will.

h) The shares for buy back are not in uniform units and the mechanism of determining the fair value of each is never in place. What is done is to treat the rent portion accruing to the client as both the price and the market value of the share – the client never sees a penny of the rent he earns. He has no option but to agree to this dubious arrangement under the gaze of Shari’ah advisors to the bank.

i) In the case of default, the condition of the customer under the MMP may be precarious. Some banks have insisted that not only the balance of capital remaining outstanding but also the return on it for the remaining period must be treated as unpaid – a liability of the client to meet the bankers’ commitment to the

depositors. The law now grants relief to the hapless in the matter under an *Ibra* proviso.

j) ZDBM is free of all the disabilities that in our view afflict the MMP. Once a default takes place the operation of mark-up in the ZDBM comes to an end; the outstanding balance on capital account alone is to be cleared. The ownership of the house is not in dispute, the property is freed of constructive liability once the outstanding amount is paid.

5. Concluding Remarks

Our plea on the incompatibility of the MMP structure with Shari'ah norms of freedom from interest and pro rata transference of ownership to the customer in home financing started towards the close of 2008 and continues unabated.⁶ It is regrettable that the learned Shari'ah scholars did not take note of the blemishes and continued endorsing contracts de facto based on compounding of returns on capital while the Qur'an condemns compounding more severely than the giving or taking of interest (3:130-132) – if interest were a curse; compounding is even worse. The neglect continues unabated albeit financing structures used in home finance have remained under intense juridical scrutiny over time and space (Hussain, 2010).

Support for the MMP structure among the bankers, especially from the mainstream, is understandable; it brings them more money and they feel at par with their conventional rivals. But what about the Shari'ah stalwarts! Presumably, most of them have no formal education in economics, even less perhaps in mathematics. Professor Volker Nienhaus, an accomplished writer in the areas of Islamic economics and finance discusses at length in Section 4 of his 2012 paper the authority and responsibilities of Shari'ah scholars decorating the banks' advisory boards. Learned and well intentioned they all are, but have limitations, he says.⁷ In conversation with a few scholars of repute, the present author found their argument to run as follows: *"Shari'ah scholars are not concerned with thought process or mechanism banks use to arrive at the uniform periodic installment payment amount. They enter into the picture only when the contract structure with its terms and conditions are presented to them for approval."*⁸ This looks a bit oblique. We believe it is the duty of the experts paid highly for the job to look if the contract would remain law abiding over the course of operation. In general, not only in home financing but in financing all consumer durables –cars, computers, refrigerators and the like - banks use the same formula to fix the payable EMI. We make the following statement with conviction and evidence:

All uniform periodic payments in asset financing that combine amortization and return on investment, however determined, must result in compounding and property ownership transfer to the disadvantage of the customer until

⁶ The papers are all available on the website 'Zubair Hasan at IDEAS' with ample documentation and references.

⁷ The most serious of these limitations, Nienhaus (2012, n. 27) feels, is their lack of knowledge about the complexities of determinant factor relationships in modern economies and their inability to appreciate the range and speed of change affecting the events, let alone their repercussions. He quotes Ünal, Murat to claim that "only 20% of today's Shari'ah scholars have had a formal education in economics."

⁸ A Shari'ah certificate for MMP is provided as specimen in Appendix to this paper for the readers' ready reference. The document does not provide the formula for installment determination or illustration of its operation, but if the monthly payment *"comprised of Profit Payments and Acquisition Payment"* is *uniform* as it seems to be it is not Shari'ah compliant if the criteria we have spelled out are valid. Guidance is sought with gratitude.

Turkish Economic Review

successfully completed. Such payments are unlawful in Islam unless proven or justified otherwise.⁹

We have shown that the ZDBM is free of the indicated defects. Even the convectional banks may use it for efficient performance to the benefit of self, their clients, and the society at large.

Finally, the comments in support or against the argument of the paper on the MMP are most welcome. The spread of untruth on either side of the fence must stop. On our part we shall only be glad, rather grateful, if convinced to revise our position

Appendix

(From the) Declining Balance Co-Ownership Home Acquisition Program

Fatwa

We, the Shari'ah Supervisory Board of Guidance Financial Group, LLC (Guidance) have examined the documents of the Declining Balance Co-Ownership Home Acquisition Programs, inclusive of the Co-Ownership Agreement, Security Instrument, Consumer's Obligation to Pay, and Assignment of Agreements, all of which are required for each program. We have reviewed these documents and the purposes for which they have been designed, namely:

1. to assist Muslims and others residing in the United States of America to acquire their homes in compliance with Shari'ah,
2. to enjoy the tax benefits accorded by the federal government to home owners,
3. and for the investors to securitize their ownership investment in homes. The basic concept behind these contracts and documents is that the property is purchased in joint ownership between an affiliate of Guidance (the Co-Owner) and the person who requires finance (the Consumer). The Consumer makes monthly payments which are comprised of Profit Payments and Acquisition Payments. Profit Payments represent the Consumer payments for the enjoyment and use of the whole property, while Acquisition Payments represent the Consumer's payments for his acquiring the Co-Owner's interest in the property. It has been ascertained by the Shari'ah Supervisory Board that the documents comply with the Shari'ah requirement for a valid "Diminishing *Musharakah*" arrangement, and that both parties benefit and bear the risks of their respective shares in the property throughout the contractual arrangement. The documents designed for "Replacement" are meant for a situation where a person has already acquired a property and wishes to enter into a Shari'ah compliant arrangement. In this case, he will sell a share of his property to the Co-Owner, and then both parties will have the same arrangement of "Diminishing *Musharakah*" as detailed above. Since the units of property will be purchased by the consumer - 2 - under this arrangement at cost, and without increase, there is no element of *'ina* in this arrangement. After reviewing the mechanism as well as the agreements and documents, and after suggesting amendments that have been incorporated, the Shari'ah Supervisory Board is of the view that given the circumstances prevailing in the United States, this arrangement conforms to the rules and principles of Shari'ah; and therefore, Muslims may avail themselves of this opportunity to acquire homes and properties by means of this method.

Agreed this 21st of October 2002

Justice Muhammad Taqi Usmani	Dr. Abdul Sattar Abu Ghuddah
Shaykh Nizam Yaquby	Shaykh Yusuf Talal DeLorenzo
Dr. Mohamed Elgari	Dr. Muhammad Imran Usmani

⁹ INCEIF the Global University of Islamic Finance has reversed their earlier position stated on page 2. An updated argument was sent to them but they politely declined to change their position, insisting that the MMP is fully compliant and better than the ZDBM, assigning no reasons.

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